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10/045,325	10/25/2001	Naomi Goto	MAT-8191US	2446

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EXAMINER
MILLER, PATRICK L

ART UNIT	PAPER NUMBER
2837	

DATE MAILED: 06/10/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/045,325	Applicant(s) GOTO ET AL.	
	Examiner Patrick Miller	Art Unit 2837	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-12 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-12 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 25 October 2001 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities: Page 6 of specification, brief description of Figure 28 does not cite this being a drawing of conventional or prior art, as indicated in Figure 28. Appropriate correction is required.

Claim Objections

2. Claim 3 is objected to because of the following informalities: See bullets below. Appropriate correction is required.

   - Claim 3 cites, "the wire" (last line). There is a lack of antecedent basis for this term.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1, 7, and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's disclosed Prior Art (Prior Art Drawings and *Background of Invention*) in view of Toda et al (5,712,540), Baader et al (5,237,494) and Ciaccio (5,594,199).

   - The Applicant's disclosed Prior Art (Prior Art Drawings and *Background of Invention*) disclose an electric circuit of an electric vehicle (specification page 1, line 24), said circuit comprising: a drive motor (Fig. 25, #62); a drive motor driving device (Fig. 25, #4); an electric compressor for air-conditioning the vehicle (Fig. 25, #23); a compressor driving device (Fig. 25, #5); and a dc power supply (Fig. 25, #1) that is coupled to the

input terminals of the drive motor driving device and the compressor driving device (Fig. 25, #1 connected to #4 and #5).

- The Applicant's disclosed Prior Art does not disclose a smoothing capacitor coupled to the input terminal of the drive motor driving device and shared by both of said driving devices; a radiator shared by both of said driving devices; and a case for shielding electromagnetic wave, wherein said driving devices and the smoothing capacitor are disposed in the case.
- Toda et al disclose a capacitor that is coupled to the inputs of two different motor driving devices (Fig. 1, #2e to #4 and #13). The motivation to do such is to reduce voltage spikes and so one converter can supply dc voltage to two inverter circuits. This provides the advantage of reducing overall component size, since only one converter (capacitor) is needed for two motors.
- Baader et al discloses multiple motor drive circuits mounted on a common heat sink (radiator) (Fig. 1, #10). The motivation to do such is to provide the advantage of reducing electrical and mechanical complexity (Abstract).
- Ciaccio discloses an EMI (electromagnetic interference) baffle that encloses the control circuitry that controls multiple motor drivers. Specifically, Ciaccio explicitly discloses one motor; however, one having ordinary skill in the art would know that the heater (Fig. 1, #44), air conditioner (Fig. 1, #50), and lube pump (Fig. 1, #56) also have motors for fans and thus the baffle encloses at least two motor drive circuits. Ciaccio's motivation for providing such is to reduce the flow of stray radiation toward the circuits in the

housing. This provides the advantage of reducing improper circuit operation due to interference (Col. 2, lines 57-65).

- Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to modify the circuit disclosed by the Applicant as Prior Art with the following modifications: One capacitor is shared by two different motor drive circuits, thereby providing the advantage of reducing overall component size, as taught by Toda et al; the motor driving circuits could share a radiator (heat sink), which provides the advantage of reducing electrical and mechanical complexity, as taught by Baader et al; and a case that encloses the driving devices and the smoothing capacitor, thereby providing the advantage of reducing improper circuit operation due to interference, as taught by Ciaccio.
- With respect to claim 7, the Applicant's disclosed Prior Art (Figs. 25 and 26) discloses the compressor-driving device including an inverter circuit (Figs. 25/26 #9), and a power-line from the power supply connected directly (Fig. 25, #1 to bottom of inverter, #9) and via a current detector (Fig. 26, #1 to bottom of #9 via #15).
- With respect to claim 8, the Applicant's disclosed Prior Art (Fig. 26) discloses a compressor-driving device controlling circuit (Fig. 26, #19) and a power supply circuit for converting a dc voltage and supplying said converted voltage to the driving device controlling circuit (Fig. #12 and #16 to #19).

4. Claims 2, 10, and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's disclosed Prior Art (Prior Art Drawings and *Background of Invention*), Toda et al, Baader et al, and Ciaccio as applied to claims 1, 4, and 5 above, and further in view of Betsusou et al (JP 64-031380).

   - Applicant's disclosed Prior Art (Prior Art Drawings and *Background of Invention*), Toda et al, Baader et al, and Ciaccio do not disclose the wires extending from the power supply being different lengths.
   - Betsusou et al disclose wires leading from a transformer (represents dc power supply) to an inverter, where the wires differ in length. The motivation to provide such is so the wires will be connected to the correct terminal. This provides the advantage of assuring the life of the device (Abstract).
   - Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to modify the circuit of Applicant's disclosed Prior Art (Prior Art Drawings and *Background of Invention*), Toda et al, Baader et al, and Ciaccio with wires having different lengths, thereby providing the advantage of assuring power is connected correctly and preventing damage to the device, as taught by Betsusou et al.

5. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's disclosed Prior Art (Prior Art Drawings and *Background of Invention*), Toda et al, Baader et al, and Ciaccio as applied to claim 1 above, and further in view of Makaran (5,744,921).

   - Applicant's disclosed Prior Art (Prior Art Drawings and *Background of Invention*), Toda et al, Baader et al, and Ciaccio do not disclose the driving device including one of a film

capacitor and a ceramic capacitor and coupled between wires extended from the power supply.

- Makaran discloses a control circuit with film capacitors extended from the power supply. The motivation to do such is to provide the advantage of smoothing voltage and reducing EMI emissions (Col. 4, lines 29-38).
- Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to modify the circuit of Applicant's disclosed Prior Art (Prior Art Drawings and *Background of Invention*), Toda et al, Baader et al, and Ciaccio with a film capacitor extended from the power supply, thereby providing the advantage of smoothing voltage and reducing EMI emissions, as taught by Makaran.

6. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's disclosed Prior Art (Prior Art Drawings and *Background of Invention*), Toda et al, Baader et al, and Ciaccio as applied to claim 1 above, and further in view of Wagner (6,207,900).

- Applicant's disclosed Prior Art (Prior Art Drawings and *Background of Invention*), Toda et al, Baader et al, and Ciaccio do not disclose the wires including a shielded-line having a core wire, and an outer wire, where said core and outer wires supply power (claim 4).
- Wagner discloses a hybrid cable that has a shielded portion (Fig. 1, #4, #10), a core wire (Fig. 1, #1), and an outer wire (Fig. 1, #2). Wagner's motivation for providing a cable as described is to minimize cross-sectional area. This provides the advantage reducing costs by implementing supplemental conductors along with the primary conductors as opposed to using several cables (Col. 1, lines 36-50).

- Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to use a cable as described above to deliver power to the device of the Applicant's disclosed Prior Art (Prior Art Drawings and *Background of Invention*), Toda et al, Baader et al, and Ciacci, thereby providing the advantage of minimizing cross-sectional area, as taught by Wagner.

7. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's disclosed Prior Art (Prior Art Drawings and *Background of Invention*), Toda et al, Baader et al, and Ciaccio as applied to claim 1 above, and further in view of Tsukamoto et al (6,476,329).

   - Applicant's disclosed Prior Art (Prior Art Drawings and *Background of Invention*), Toda et al, Baader et al, and Ciaccio do not disclose the wires being parallel and held by bendable resin.
   - Tsukamoto et al disclose wires that are made of flexible resin and include a parallel portion (Col. 1, lines 45-46 and Col. 4, line 52). The motivation to provide such is to provide the advantage of improving transmission characteristics (Col. 1, lines 41-43).
   - Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to use a wire as described above to deliver power to the device of the Applicant's disclosed Prior Art (Prior Art Drawings and *Background of Invention*), Toda et al, Baader et al, and Ciaccio, thereby providing the advantage of improving transmission characteristics, as taught by Tsukamoto

8. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's disclosed Prior Art (Prior Art Drawings and *Background of Invention*), Toda et al, Baader et al, and Ciaccio as applied to claim 1 above, and further in view of Pieronek et al (5,452,201).

- Applicant's disclosed Prior Art (Prior Art Drawings and *Background of Invention*), Toda et al, Baader et al, and Ciaccio do not disclose the wires being twisted-paired.
- Pieronek et al disclose wires that are twisted-pair that deliver power to a motor controller (Fig. 1, power through #18 to #12). The motivation to provide twisted-pair power wires is to provide the advantage of protecting against reverse polarity and high voltage spikes (Col. 5, lines 58-66 and Col. 10, lines 18-24).
- Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to use a twisted-pair wire as described above to deliver power to the device of the Applicant's disclosed Prior Art (Prior Art Drawings and *Background of Invention*), Toda et al, Baader et al, and Ciaccio, thereby providing the advantage of protecting against reverse polarity and high voltage spikes, as taught by Pieronek et al.

9. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's disclosed Prior Art (Prior Art Drawings and *Background of Invention*), Toda et al, Baader et al, and Ciaccio as applied to claim 1 above, and further in view of Watson (6,414,455).
   - Applicant's disclosed Prior Art (Prior Art Drawings and *Background of Invention*), Toda et al, Baader et al, and Ciaccio do not disclose lowering the output of the driver for heavy loads.
   - Watson discloses decreasing the speed (lowering the driver output via the control system) during high loads. The motivation to do such is to reduce mechanical loading and provides an increase in operational efficiencies. This provides the advantage of reducing power consumption (Col. 17, lines 59-66).

- Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to modify the circuit of the Applicant's disclosed Prior Art (Prior Art Drawings and *Background of Invention*), Toda et al, Baader et al, and Ciaccio, by lowering the driver output (via the control system) during high loads, thereby providing the advantage of reducing power consumption, as taught by Watson.

10. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's disclosed Prior Art (Prior Art Drawings and *Background of Invention*), Toda et al, Baader et al, and Ciaccio as applied to claims 1 and 8 above, and further in view of Goto et al (5,714,806).

- Applicant's disclosed Prior Art (Prior Art Drawings and *Background of Invention*), Toda et al, Baader et al, and Ciaccio do not disclose a diode and switch disposed in parallel and connected to the power and compressor driving device.
- Goto et al disclose a diode and switch disposed in parallel and connected to the power and compressor-driving device (Fig. 1, #28 and #16 are parallel and connected to #14 and #12). The motivation to provide such is to run the compressor from the battery when the switch is closed and charge the capacitor when the switch is open. This provides the advantage of charging the capacitor and not letting reverse-current damage the battery (Col. 3, lines 42-67).
- Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to modify the circuit of Applicant's disclosed Prior Art (Prior Art Drawings and *Background of Invention*), Toda et al, Baader et al, and Ciaccio, as disclosed above, thereby providing the advantage of preventing damage to the battery, as taught by Goto et al.

Prior Art of Record

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Yoshida et al (5,604,672) disclose an inverter apparatus for an air conditioner with a drive motor and a motor for a compressor.
- Shimazaki (JP 08043440) discloses a motor and driver enclosed in a cover that shield the electrical components and motor from electromagnetic interference.
- Kim (5,309,052) discloses a circuit for shielding electromagnetic noise from a motor.
- Ouellette et al (6,281,649) disclose a system with two motors, where two separate drive circuits share a heat sink.
- Fukuda et al (5,769,907) disclose a capacitor with different length leads, to determine polarity.
- Donegan et al (5,757,151) disclose a motor driver with film capacitors.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patrick Miller whose telephone number is 703-308-4931. The examiner can normally be reached on 8:30-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Nappi can be reached on 703-308-3370. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9318 for regular communications and 703-872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-306-3431.

Patrick Miller
Examiner
Art Unit 2837

pm
June 4, 2003

Bentsu Ro
Primary Examiner